

WHAT IS CLAIMED IS:

1. A magnetic guiding apparatus for guiding a moving member by attracting a target by electromagnets provided on the moving member, said apparatus comprising:

magnetic-flux detection means movable along the target, for detecting a magnetic flux of the target;

position measuring means for measuring a position of said magnetic-flux detection means; and

control means responsive to position information from said position measuring means and magnetic-flux information from said magnetic-flux detection means for detecting a position of the magnetic flux at the target, and for performing demagnetization at the detected position of the magnetic flux.

2. A magnetic guiding apparatus according to Claim 1, further comprising storing means, wherein a magnetized position at the target is identified by moving said magnetic-flux detection means over an entirety of a movable region on the target while detecting the magnetic flux by said magnetic-flux detection means and storing the position information and the magnetic-flux information of the target in said storing means.

3. A magnetic guiding apparatus according to Claim 1, wherein said magnetic-flux detection means is mounted on the moving member.

4. A magnetic guiding apparatus according to Claim 1, wherein

demagnetization is performed by moving the electromagnets to the position of the magnetic flux using the moving member and providing the electromagnets with a current signal by said control means.

5. A magnetic guiding apparatus according to Claim 1, wherein at least one of the electromagnets is used as said magnetic-flux detection means.

6. A stage apparatus comprising:

a magnetic guiding apparatus according to Claim 1.

7. An exposure apparatus for positioning at least one of a substrate and an original by a stage apparatus according to Claim 6.

8. A device manufacturing method comprising:

a step of manufacturing devices by an exposure apparatus according to Claim 7.

9. A stage apparatus comprising:

a target extending along a direction;

a moving member supported by said target and movable along said target;

electromagnets provided at said moving member and producing a force between said target and said electromagnets;

magnetic-flux detection means provided on the moving member for detecting a magnetic flux of said target;

position measuring means for measuring a position of said moving member; and

control means for detecting a position of the magnetic flux at said target based on position information from said position measuring means and magnetic-flux information from said magnetic-flux detection means.

10. A stage apparatus according to Claim 9, wherein said control means reduces said magnetic flux.

11. A stage apparatus according to Claim 10, further comprising a servo positioning system for positioning said moving member, wherein said servo positioning system is off during a reduction in the magnetic flux.

12. A magnetic guiding method for guiding a moving member comprising the steps of:

attracting a target by electromagnets on the moving member;

detecting a magnetic flux in the target by a magnetic flux detecting means movable along the target;

measuring positions of the magnetic flux detecting means;

detecting a position of magnetic flux in the target from responsive to the measured positions and detected magnetic flux; and

performing demagnetization at the detected position of the magnetic flux.

13. A magnetic guiding apparatus for guiding a moving member by attracting a target by electromagnets provided on the moving member, said

apparatus comprising:

a magnetic-flux detector movable along the target, for detecting a magnetic flux of the target;

a position measuring unit for measuring a position of said magnetic-flux detector; and

a controller responsive to position information from said position measuring unit and magnetic-flux information from said magnetic-flux detector for detecting a position of the magnetic flux at the target, and for performing demagnetization at the detected position of the magnetic flux.